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Some fermentations in medical education



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SOME FERMENTATIONS

IN

MEDICAL EDUCATION.

HAROLD C. ERNST.

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SOME FERMENTATIONS
IN
MEDICAL EDUCATION.

THE ANNUAL ADDRESS

DELIVERED BEFORE THE

Massachusetts Medical Society

JUNE 8, 1904.

BY

HAROLD C. ERNST, A.M., M.D.

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BOSTON.

MASSACHUSETTS, U. S. A.

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SOME FERMENTATIONS IN MEDICAL EDUCATION.

MR. PRESIDENT AND FELLOWS
OF THE MASSACHUSETTS MEDICAL SOCIETY :—

In looking up the history of the office I am honored in attempting to fill to-day, certain points of interest have been brought to my attention.

In 1804, Dr. Isaac Rand delivered the first Annual Address—on Phthisis Pulmonalis, and the use of the warm bath—and with six exceptions (1814, 1815, 1819, 1825, 1831, 1832) the practice has been continued annually, until to-day it enters upon the second century of its existence.

The subjects considered in this long line of addresses cover, as might be supposed, a wide range, and it is interesting to note a gradual change that has occurred. About twenty per cent. (19 out of 95) have been upon what may be called "specific" lines of thought—such as the first one (mentioned above) or those of Abraham Haskell (1812) on Cynanche Trachealis, Walter Channing (1833) on Irritable Uterus, or Horatio Adams (1858), Investigations upon the subject of Vaccination. Such specific subjects were, however, very largely treated more than fifty years ago (17 out of 19), and in the last half century the speakers upon this occasion have usually considered matters of general interest to the profession in a long series of entertaining essays,

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Evidently the matter of education has been much in the minds of medical men, for nearly half of the addresses during this latter period have had this for the major, or a prominent minor theme. Indeed it was first treated specifically in 1822, by Dr. John G. Coffin, (On Medical Education and on the Medical Profession), but the somewhat marked increase of attention given to it of late years, shows how actively the specific fermentations of advanced thought have been producing changes and by-products with which we shall have to deal.

The men who have brought these matters before the Society command attention by the honorable position they have held in the ranks of the profession, and the list includes many of the names most familiar to us of to-day as being among the leaders of medical thought in the past.

It has been, therefore, with many misgivings that I have endeavored to prepare myself to say something that has not been said and better said before.

Without thought that this latter is possible, it may be well to consider some of the changes—fermentations—going on in medicine, now, as in all previous stages of its history. To see what elements of good have come, and perhaps to forecast some of what may be hoped for when the end results are reached.

One of the most impressive incidents in a recent trip abroad, occurred in Paris upon the occasion of a visit to the Institute Pasteur. The spirit of the place is present everywhere—the spirit of earnest search for some addition to human knowledge, for some alleviation of human suffering, inculcated in all his pupils by the master mind of the founder.

This is not the place for a eulogy of Pasteur, but no man has a nobler monument than the busy hive of industry that surrounds his quiet resting-place. Here are workshops where efforts are made to solve some of the problems of

disease, by men whose lives are given to the work, and whose hopes do not go beyond that of some success to crown their efforts. These workshops are perfect of their kind, and the tools they hold are handled by a force of men unsurpassed in training, ability and enthusiasm. Besides these investigators, endeavoring to open out new lines of knowledge that shall benefit humanity, others are constantly employed in making use of those already known, and in applying the results of past labors to present suffering. One may see there, any day and all day, men of world-wide reputation, each imbued with that spirit of which there is an all too small allowance in existence—the true spirit of scientific research, the desire for the enlightenment of the human race. There can be no other motive that compels this constant devotion to their life-work. The pecuniary reward is such that a statement of it is always met with wonder and incredulity. And yet these men are content with what their life offers them—work on day after day, and will continue until the time that work is no longer possible.

To one knowing these facts and how slight the reward may be, the sight of this busy place is a stimulation not easily forgotten or set aside.

I do not mean that here only is such self-sacrificing devotion to be found—far from it. The impressiveness of the place is due to the thought of how much good to humanity has come and may be expected to come from the workers that have been or are now there. Similar instances of individual devotion to duty in this direction may be found the world over; but, as I believe, no instance of so much accomplished and so much attempted in the same place.

The spirit of commercialism is absolutely absent; the fraternity of research for advancing human welfare is the good to which their efforts tend; money rewards that sometimes come—as the Nobel prize to one of them—are devoted

to the common aim, as by Pasteur himself, and no thought of personal aggrandizement comes to any who gain admittance to this brotherhood.

Such a condition of things leads a thoughtful mind to the consideration of how it could have come about—what underlying force could have produced such a band of devotees to a cult that has no attraction for the practical man, and, indeed, is beyond his comprehension. Still further thought comes, how can such a spirit be bred and cherished among us here; what is our duty and responsibility in the matter.

The impelling force in this instance is undoubtedly that of Pasteur himself—a man distinguished always for his simplicity of life, devotion to duty, and elevation of ideas.

As may be read in the story of his life, his career was precisely that of the fermentations he studied; marked by ceaseless activity, the constant production of fresh adjustment of ideas, much uncertainty and doubt, some useless by-products, and an end result of good, of lasting and widespread influence over all with whom it came in contact. Courteous in controversy, patient and persistent under failure, generous in praise to others, modest when success was reached—the influence of such a man could not help but be profound upon those it reached at all. It was profound, and to-day it governs the work carried on in his institute and by his pupils.

The racial influence is of course behind it all. The French spirit of scientific investigation in general, in its highest form, is of the same character—this is but an instance made conspicuous by a man of great ability.

This spirit then is the basis of the work here spoken of—simplicity, altruism, devotion to the truth; what can we do to develop and cherish it with us?

There is rising, not far from the place we now occupy, a group of buildings, that when completed will form a noble addition to the beauties of the city. They are the result of many forces—notably of the far-sightedness and enthusiasm of two men—this aided and supported by many others, whose generous contributions have made the result possible. The conception of such a plant was so daring that the first attempts to convince its hearers were discouraged and even now are not infrequently heard with scepticism.

The time for such a move had come however, and the men were at hand to carry it out. Now that their labors are approaching completion it is full time to consider what shall be done in those buildings when completed, and how the great trust shall be administered.

In his last address to the students of The Harvard Medical School, Oliver Wendell Holmes says this: "Leyden, Edinburgh, Paris, were each in turn the Mecca of medical students, just as to-day Vienna and Berlin are the centres where our young men crowd for instruction.

"These also must sooner or later yield their precedence and pass the torch they hold to other hands. Where shall it next flame at the head of the long procession? Shall it find its old place on the shores of the Gulf of Salerno, or shall it mingle its rays with the northern Aurora up among the fjords of Norway,—or shall it be borne across the Atlantic and reach the banks of the Charles, where Agassiz and Wyman have taught, where Hagan still teaches, glowing like his own *Lampyrus splendidula* with enthusiasm, where the first of American botanists and the ablest of American surgeons are still counted in the roll of honor of our great University."—(O. W. Holmes, *Some of my early teachers. Medical Essays*, ed. 1888, p. 438; Houghton, Mifflin & Co).

So far as buildings and facilities are concerned the query and suggestion made twenty odd years ago may be

answered in the affirmative—the doubt that remains is the capacity of the successors of the great names mentioned to fully utilize and develop the trust placed in their hands.

The changes that have occurred in The Harvard Medical School within the last generation have been very great. In the early seventies the Faculty of the School took the step of grading the course of study and requiring students to pass from one subject to another in logical sequence and after examination; a step that was taken with many forebodings and that resulted in a tremendous pecuniary loss to the School (by cutting off the number of students), but that was so necessary that the struggle to carry it through cannot be realized to-day. In the early eighties the School moved into its present building, and it was then thought that many years would pass before its needs could even occupy the space then had. On the contrary—even with the help of the Sears addition—the most effective work for the students has been hampered for some time past, and some of the Departments are and have been crowded to the extent of often being obliged to refuse special students. In 1896 the Faculty decided to raise the standard of admission to the School by the requirement of a degree in Arts, Letters or Science—with some special exceptions—and this regulation went into effect in 1901. It had been looked forward to with much trepidation by many of the teaching force, and with lively fears that the School would lose so many scholars that it would be pecuniarily crippled (as has since occurred). It cannot be doubted however, that if this unfortunate result should temporarily continue, the friends of the School will support it through any such trying period, as generously as has always been the case. That this is practically certain, is shown by the encouragement to the efforts making to bring about the greatest advance that the School has ever thought of—a scheme for securing its future for generations to come, together with

the establishment of what will be, if it can be carried through, the most perfect University of Medical Science that the world has yet seen. A place where students of medicine in all its branches may come, to find an equipment perfectly adapted to their needs, and teachers prepared to foster and encourage research in all its directions for the demonstration of new truths, as well as to give instruction in all branches of present medical knowledge. (Adapted from *Progress of Medicine, 1850-1900*. H. C. Ernst, May 8, 1900).

How this may best be done in any case is matter for much careful thought, and the solution of the problem is to be sought in two different directions.

If a student is to take the best advantage of what is offered to him, he must have an opportunity for the proper care of his body, and the better the facilities for study that can be given the more likely is the best that is in him to be developed.

Now the right of community life, claimed by all companies of scholars, has been denied to students of medicine in recent generations and in this country. It is but recently that we have begun to look upon the medical school as anything but a trade enterprise — on the part of the teachers as a means for filling their pockets; on the part of the students as a place where they may be taught how to earn a living. The conception of a medical school as in any sense a part of a University, or a place where university study should be carried on and encouraged, is a product of those recent fermentations of which I have already spoken, and has but recently begun to develop in such form as makes it possible to realize it.

Directly connected with this thought, and growing from it, is the need for offering such opportunities for a scholar's

life as will make the hall-bedroom in a cheap lodging-house a thing of the past, and add to the dignity of student life in medicine what it now lacks — the charm of collective living with a common purpose. The first need therefore for the student life of the future University Medical Department is dormitories, in which the students, attracted by the courses offered or the reputation of the teachers to be heard, may learn to know each other and have easy opportunity for fostering the high ideals and learning early the noble purposes of their life's work.

Nothing can possibly take the place of this community of living in effective development of these ends, and the mantle of the Alma Mater should be spread over all her sons in embryo — even if not *in esse*. (The refusal of the right to vote for Overseers except to graduates of the Academic and Scientific Departments.).

While these lines were being written it is evident that others felt the need of this provision for student life in other Departments of the University. For in the June number of *The Harvard Graduates' Magazine* may be found these words: We are come to the parting of the ways, where we must either make up our minds that the social life of the students is none of our affair — and in that case we had probably better give up the college as an institution altogether, and confine ourselves to the work of the schools which prepare men for practical life; or we must bring our men together into a real community, with a common life—a true college life.

This can never be done by outside dormitories built by private enterprise, because their effect is of necessity a segregation into distinct social groups based largely upon wealth. It can be done only by means of modern college dormitories, large enough to house the great bulk of the students within the College walls. Such a plan would benefit not any one class alone, but all the undergraduates.

. I shall be told that I am struggling against the spirit of the age, which is materialistic and plutocratic. But while it is true that every institution—and a University no less than any other—must recognize and adapt itself to the spirit of the times, it is also true that the very object of a University is to keep before men's minds those things that lie beyond the spirit of the age, the deeper things whose value is eternal. (A. Lawrence Lowell. *The Harvard Graduates' Magazine*. June, 1904, p. 527.)

Even if a student be comfortably housed, he must be fed as well, and as great an obligation rests upon the governing body in this as in the preceding direction. There is no more impressive feeling that a visitor experiences in Oxford or Cambridge than during a visit to the dining-halls of the colleges; each with its customs, its traditions, its portraits and its furniture, bearing a message of loving service to all who care to hear. Why then, should the students of any University Department be left to the mercies of the common eating house, with never a reminder that life has a more cheering face than faded walls and spattered linen at each renewal of its strength.

How much this question of feeding means, apart from its esthetic side, is indicated in these words of the Head of Harvard University—speaking recently at Springfield: There was another question presented to the Corporation, that affects another very useful thing in Harvard College, that affects the dining-hall—the dining-hall association. I suppose you realize the fact that it would have been impossible to build up the present University at Cambridge if the Corporation had not paid careful attention thirty years ago to the mode of feeding the students at Cambridge in a wholesome and cheap way. I believe that to be the absolute and literal fact. (Charles W. Eliot. Speech to Connecticut Valley Harvard Club, March 16, 1904. *The Harvard Bulletin*, March 30, 1904).

Here then is the practical side of this need emphasized and clearly stated as the result of thirty years' experience. The words mean the simple fact that good fuel must be provided to secure the best results from man's vital engines as for any other mechanism. But in addition to this there should be the influence exerted by comfortable surroundings made as beautiful and dignified as may be by architectural effect and mural decoration. (See also Report of Committee of the Board of Overseers of Harvard College to visit The Medical School, 1904, emphasizing the importance of this matter.)

A University Medical School is as compact a unit as a college of Oxford or Cambridge—its students may be welded into as close a body, very largely by such an influence as this. If thus brought together in study and in play, the influence of the strong will be more strongly felt and the weaknesses that might grow will at least be much less active in that growth.

Further, distinct provision for the mental nourishment of the medical student of today should be made. Time has been, when a scalpel or two, a bone and book or two, were all sufficient for his needs. This is no longer true, and the best of text-books—all of them; the best of Journals—all of them, should be in easy reach at convenient hours and in a comfortable home. The Harvard Union, the latest monument of a great citizen's generous love and interest in the young; an enduring influence for good in the community in which it stands, might well be the model, which with proper adaptation to the special needs, would serve the purpose well.

Provision for these needs is a duty that cannot be ignored, even if present conditions prevent its immediate fulfilment.

Further than this, too, there should be some care for the student when sick, and help of this sort is to be much more easily given if the student body be closely brought together, than if, as is too often the case, it be widely scattered and neglected. Recent experience has demonstrated the need of such care as is here meant—that there should be some man or body of men, whose aid might be sought in any difficulty concerning health, and by whom applications would be received with sympathy and attended to with promptness. After such an agency has been once established, its success would depend upon the degree of efficiency with which its duties might be fulfilled. It cannot be doubted that if well done it would prove an ever increasing source of aid and comfort to students standing in need of its services.

This then is the amount and kind of attention that should be paid to the care of the students of the Medical Department of a University. They should be made to feel that they are a part of a company of scholars—not individuals merely seeking for a means of livelihood. In the particular case used for an example, necessity has compelled the teaching force in medicine to be widely separated from the rest of the University. This, from many points of view, is most unfortunate, especially because it requires the establishment of complete institutions of the kind spoken of—dormitories, dining-hall, reading and assembly rooms—separate and distinct from those already in existence for the service of the larger body of students. The isolation of this part of the University body makes it all the more imperative that its installation should be complete.

A far more complex problem—even for paper consideration—than that just discussed in the development of University education in medicine, is as to what shall be taught and how?

Minute details it is not intended to enter upon here, but

there are general considerations that are of vital importance.

As wise and perfect a course as can be devised should be placed in operation leading to the best training for the practice of medicine. Inasmuch as present usage in this country requires that the practitioner of medicine should hold a Doctor's degree, it would be impossible to confer a lower with satisfaction to the main body of students—even though it be true that such Doctor's degree does not confer the right to practice. It may be hoped that eventually the value of the discarded Bachelor of Medicine may revive and that a more perfect scheme of University education in medical science may be worked out than is now possible.

It should be practicable to lay out a course qualifying the student for the practice of medicine, that would not require, as is now the case in many institutions, the preliminary education represented by the bachelor's degree in arts. As conditions are, this is impossible, and the best schools of to-day are graduate schools in the sense of requiring a preliminary degree—with some exceptions—in arts, letters, philosophy or science, of those who desire to enter upon the study of medicine.

The degree of Doctor of Medicine should however be looked upon, when conferred by this better class of institution—certainly when they are parts or Departments of Universities—as indicating that the holder has been trained upon broader lines than those qualifying simply for the practice of medicine.

One method by which this end has been sought, is by the offering of electives — at present only in the later years of the course — by a selection from which a student may prepare himself for a career in the more purely biological branches. This is not a perfect solution of the problem—for just as long as all practitioners of medicine in this country feel the need for holding the degree of Doctor of Medicine, just so long will it be impossible to give that degree the

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same standing as a representative of general culture as is now held by the degrees of Doctor of Philosophy or Doctor of Science—which it should do from the University point of view.

The advance of knowledge in branches of biological science connected with a medical school, and the development of laboratories and research work connected with them, brings out a new point of view. It makes it possible to look at them as channels through which a way may be constructed leading to other University degrees — the paths leading to these degrees to run side by side with that to the Doctorate of Medicine on the one hand, and with those laid out by other Departments of the University on the other.

In a recent discussion upon the nature of degrees best given for scientific work, may be found the following by President Eliot: I beg to state that in my opinion, the best degrees to confer for scientific work, as for all other work, are the degree of bachelor of arts, the degree of master of arts and the degree of doctor of philosophy. In a temporary and provisional way the inferior degree of bachelor of science, master of science and doctor of science have been used—with some variations of name and corresponding letters—in our country, because the preparatory work at school required of candidates for these degrees has been smaller in amount and inferior in quality than the work required of candidates for the traditional degree of bachelor of arts. This relative inferiority of the scientific degrees now begins to be overcome. When it is overcome there will be no reason for persisting in the special degrees which have the word 'science' in their title. More and more the equal dignity and value of scientific subjects in comparison with the humanities is recognized. When that recognition is complete and universal, there will be no need of giving one degree for excellence in languages, history or philosophy, and a different degree for excellence in economics, architecture,

chemistry or zoölogy. All good work, in whatever field, ought to be rewarded by the same academic distinctions.

For these reasons I consider separate degrees for scientific work to be undesirable although provisionally necessary. They have heretofore been degrees of lower standing or repute, and they are likely to continue to be so regarded. I hope that they tend to be abolished. (Charles W. Eliot. *Science*, N. S., XIX. p. 812.)

So that the future complete Medical Department of a University must look forward to a variety of functions and must provide for a variety of degrees, suited to the various sorts of students that will, or should be, attracted by its teaching. It must be something more than a simple medical school—offering instruction only to those intending to practice medicine. It must do this of course, and in the best possible way—making arrangements for instruction in the laboratory branches sufficient for the needs of the well-educated practitioner, and supplementing this laboratory instruction with such a profusion of clinical work that the student pursuing the course will be well fitted—upon its completion—for the responsibilities that may soon be placed upon him.

Inasmuch as the best University schools now require the lower degree for admission, it has been argued that their function should cease here, so far as degree giving is concerned—since in one sense they are, as has been said, graduate schools already, and that they should confine their energies solely to courses leading to the degree of Doctor of Medicine and to research. It is however but a narrow conception of the importance of many of the fundamental branches of medical science, or of those closely allied to them, that would limit their functions in this way. It is not so very long ago that Anatomy, Physiology, and Pathology were all taught by the same person—as well return to this practice, as to claim that the Departments now controlling these subjects do not expand further than what is needed by the medical practitioner.

Since their sub-division, other subjects have assumed essential importance; Histology, Embryology, Physiological Chemistry, Bacteriology, Comparative Pathology are some of those that have thus grown to importance and to special names. Others are evidently rapidly coming forward, and students may be found in the laboratories devoted to any one of these subjects, who have no intention of becoming practitioners of medicine, and to whom the clinical work prescribed is unnecessary and possibly distasteful. At the same time their desire may be to study these subjects in direct connection with the human race—it is surely of importance that they should do so—and where could such instruction be as well obtained, or where could it be more easily provided, than if built up side by side with the instruction leading directly to medical practice.

The conception is therefore of something to be planted beside and grow up with the medical school as commonly understood. And since the complexities of the education of the medical practitioner are so great, the new sort of education should be administered by a separate executive body with a separate head—to which might be given the name of The Graduate School in Medicine: not of Medicine—for the plan here suggested involves laying out courses leading to other degrees than the Doctorate, open to non-graduates as well as to graduates in medicine. This new administrative board should of course be allied with other existing boards in The Faculty of Medicine, and thus the University Department of Medicine would assume the full functions and dignity that belong to it.

Included in such a University Department, then, if the idea were carried out to its full development, there should be courses leading to degrees other than and in addition to that of Doctor of Medicine, and of varying value.

Provision should undoubtedly be made in this country, as is so generally done elsewhere, for persons desiring to

enter upon public health work. There are many positions to be filled in the direction thus indicated—positions that do not require the usual training of a practitioner of medicine, but do need a portion of that training, that could well be furnished by a selection from the courses leading to the medical degree, with some additions or amplifications as the need might be demonstrated.

The University Department of Medicine must be a place of liberal education, as well as a training school for special lines of work. The fact should be recognized that a liberal training in biological science is as possible in connection with man as with the lower animals, and therefore courses should be provided in this Department that would be sufficient for the degrees of Master of Arts, and of Science, Doctor of Philosophy and of Science.

If the broad conception of the Medical Department of a University I am endeavoring to emphasize be made clear, it is difficult to believe that the objections raised to it will not disappear. The courses suggested for these degrees should be open to all who would be qualified to enter upon them in any other Departments of the University—not limited to those possessing a degree in medicine. The fact that they should be made up largely of laboratory courses, and must also probably be supplemented by and allied with courses in other Departments of the University, would prevent this limitation. They must also—at present—be limited to the laboratory courses, for the reason that clinical teaching is not now available for such purposes; that it may become so in the not distant future is a hope of its best friends. Some of the lines of development by which this hope may perhaps be realized will be indicated later.

The discussion of such a project as is here outlined, brings out a confusion of thought that it has been difficult to clear away—the distinction between “graduate instruction” from the University point of view, and “graduate

instruction" as usually understood in medical education and illustrated by the many post-graduate schools and polyclinics that have come into existence of recent years.

The first takes as a basis for the word "graduate" the the possession of the lowest—the bachelor's—degree in Arts, Letters or Science; it means the student who has taken the first step in the company of scholars. It undertakes to provide for him the means for reaching any higher grade that the special facilities of Medical Science may offer, and to enable him to reach any academic degree that his inclinations and abilities may lead him to desire.

The second takes the meaning of the word "graduate" to be limited to a graduate in medicine, and undertakes to provide for such graduate longer or shorter courses suited to his needs—in the clinics or in the laboratories as the case may be: by the very fact of such limitation the opportunities offered are limited in their usefulness.

From the University point of view the first is the most important meaning—from the Medical, the second. But unquestionably the University standpoint is the broader; it therefore should be granted its prior claim upon the use of the term "graduate course," and courses in the suggested "Graduate School in Medicine" should include both those leading to degrees other than that in Medicine, and those offered for the special benefit of medical practitioners. These latter should be made as full and as varied as the means at hand will permit; they should be extended and repeated so that the medical practitioner should be able at any time to satisfy his need for instruction in any direction. And side by side with them should be offered the more complete, the longer courses, that may from time to time be found worthy to lead to academic distinction other than that represented by a medical degree.

This medical degree—the doctorate—may itself be enhanced in dignity and value if the plain facts of the case

should become recognized and the custom of the country be overcome. The revival of the Bachelor's degree in medicine would secure this end. This Bachelor's degree is the only one that is really necessary to insure a training fitting the student for the ordinary practice of medicine—the licensing Boards and their examinations must act favorably to enable him actually to exercise the healing art. The Doctor's degree in Medicine should represent a higher training than this, but as has already been pointed out, the century's practice to the contrary seems to make it impossible to reach this end at present.

This condition of public opinion, and indeed of the medical profession itself, is the main reason for an effort to satisfy the other demand that makes itself felt—the demand for training in the biological sciences best developed in a medical school but that shall free the student pursuing such training from the, to him, unnecessary and burdensome exercises in clinical medicine.

A further argument in support of a separate executive board in charge of both kinds of graduate instruction spoken of, is that it would serve to enhance the dignity of what I have called the less important from the University point of view. All the better class of medical schools are busily engaged in developing this form of instruction, and in devising means for attracting this class of students—by offering advantages to the medical practitioner. This medical practitioner is a graduate, and there can be no doubt that it would prove a source of attraction to him that an institution offers him the opportunity to deal with a body concerned with his needs—separate and distinct from the undergraduate medical students. That this is so, has been shown by the success of such independent institutions as have developed themselves to this line of teaching, but whose work would undoubtedly have been strengthened if it had been affiliated with that of medical schools already

established. The influence for good and the stimulation exerted would have been reciprocal.

For the proper management of these degrees there would be needed a readjustment of University administration in many cases. This would be best accomplished by having all degrees conferred by a University Council—recommendations for such degrees to come from the Faculties under which the courses leading to them were given.

A most important factor in advancing medical teaching of all kinds, will be an expansion of the development of specializing in teaching that has already been referred to.

It is the universal experience that the best results are to be obtained if an instructor devotes his entire time to his teaching and does not engage in practice. This has come to be recognized as a necessity in many branches—those in particular that are concerned with laboratory work and laboratory research. The heads of such departments devote their entire time to the development of the Department—it would be impossible for its work to be carried on satisfactorily under any other arrangement. The entire staff of all such Departments should be under the same obligation, and sufficient living salaries should be offered to satisfy this end. Precisely the same principle should be extended to the clinical branches of instruction, and clinical teachers in the future should be required to give their entire time to the departments in which they may be engaged. They should use their hospital wards and clinics as the laboratory man uses his laboratory—as places of study, teaching and research, in which the constant presence of the directing head shall serve as an inspiration to the students attracted thither. Most occupants of University chairs do this very thing—there is a constantly growing feeling against the holder of a Professorship, and of lesser places as well, doing anything for pecuniary return that may curtail

his time for teaching and research. The same principle should apply to clinical teachers in a medical department of a University.

Two objections have been urged against this suggestion: one, that a non-practitioner is not well fitted to teach how to practice; the other, that competent men cannot be found to accept such positions at any salary that the existing Universities could afford to pay. The first objection is one due to long established custom and belief, and would disappear as soon as the experiment should be tried. So far as the practice of the healing art is concerned, its methods are now learned and taught in the hospitals—and have been so, ever since the old association of each student with some practitioner was abandoned. No student of the present day learns anything about how his instructor handles patients in private practice, except from what he sees in the wards, unless, as exceptionally occurs, he makes some private visits as a special favor. As a matter of fact—the treatment of patients—the practice of the art of healing—is more perfect to-day in any good hospital than in a home, and the instructor competent to fill the clinical positions here suggested would be a man also entirely competent to teach the necessary details of practice out of the wards—so far as they can be taught.

The second objection is one that is even less serious than the first. If such positions were created, the dignity of a University chair, with control of hospital wards and of the teaching in the medical subjects covered by the chair, together with leisure and opportunity for study—all this would attract a number of men from whom a selection could be made. There is now no difficulty in finding candidates for the laboratory positions—the difficulty lies not in getting a man, but in making a selection of the best from among those available. The genius is no more common to-day than at any other time, but competent persons for such positions

can be found, and that easily, at such salaries as are afforded for other University chairs. If this should prove not to be so, it would prove erroneous the belief that academic freedom, certainty and dignity offer any advantages as against a possible overflowing purse. Of course for such a purpose the University must have a hospital of its own — or at the least be so affiliated with a hospital managed in sympathy with its aims, that it shall have a control of the appointments to the staff.

There are many kinds of hospitals and various functions to be filled by them. As this Address is dealing with so many of the fermentations now inducing change in methods and means, it may not be out of place to remind its hearers what some of these functions are. The first and common duty of any hospital — the one that laymen and medical men understand everywhere, is to care for the sick poor. To help this function is at the bottom of the foundation of them all; the desire to help the sick poor is the reason for most of the donations and bequests given to them. This function has existed from the beginning, and that it was understood to be the primary duty of such an institution is indicated by the name itself — that the inmates were "hospes" — guests — and no fixed remuneration was exacted of those who received the benefits. This function will of course always remain a prominent one, but a second has been added that is almost as generally recognized to-day; this is the obligation resting upon a hospital to teach, and thus to spread more widely its beneficent influences, by giving to others than the attending staff the benefits of the study and experience to be gained within its walls. It is not many generations ago that no hospital was used for this purpose, and medicine was taught wholly by lectures. It was because the beginning in this use of hospital wards was made at Leyden that the great fame that city attained as a center of medical learning was so early reached. And

unquestionably it is largely because this function has come to be generally recognized that medical art and teaching have reached the position of dignity they now hold. There is however a broader application of this function of teaching that has not yet become widely known, and that must be applied specifically and broadly, as it is in occasional instances, in order that the best advantage of modern methods may be taken in developing and advancing our knowledge of disease. This consists in a union of the forces of the laboratory and of the hospital staff in a more definite and complete way than has yet been accomplished, and would require a unity of purpose and a sinking of individual position and privilege that might be difficult to secure.

There are problems in medicine—and the number increases—that cannot be solved by one man, or even by one department; they must be treated by a collection of the best men of the community having knowledge of the subject, brought together for purposes of consultation and sympathetic investigation. The hospital wards should furnish the material, the laboratories the means for study in this line, the clinicians using their knowledge for the binding together of the observations made. A way in which such collective investigations could be carried on is this—it may be put in practice by existing hospitals or by new ones. Let the board in control turn its attention to some single problem pressing for solution—the question of typhoid fever for example. Why is it, that after so many advances in knowledge, the apparent mortality from typhoid fever is no less to-day than it was eighty years ago? (R. H. Fitz. Typhoid fever at the Mass. Gen. Hosp. during the past seventy-eight years. Mortality, Intestinal hemorrhage. Perforation. Relapse. Trans. N. Y. State Med. Assoc., 1899—B. M. and S. J., 1899.) Certain wards might be set aside for the collection of cases of typhoid fever—or in the case of a small hospital, its entire capacity might be devoted to the care of cases of

this disease. Let it be understood that for a term of years nothing else would be received. Coöperation with other hospitals would secure sufficient material. The control of the wards should be placed — not with a permanent staff — but with a set of specialists selected for their fitness to handle various parts of the problem. All needed laboratory facilities should be added, and then for a period of three, five or more years, the whole of this complete force should be engaged in the study of the problem set before it. The advantage of such a method of collective study cannot be over-estimated. From the point of view of the hospital—especially if small—the reputation and efficiency to be gained by such concentration of effort could not be reached in any other way; the patients would benefit by the attendance of men and the use of methods specialized and perfected to the highest degree; humanity in general would be likely to benefit by improvement in methods, the result of such combined effort and study concentrated upon one problem.

The partial results to be thus obtained are seen in certain diseases in the results of treatment in the South Department of the Boston City Hospital, where known methods are applied by skilled experts to a limited series of diseases. The plan here suggested, however, involves the effort to penetrate unknown paths, and this upon a large scale with a clearly marked map of campaign.

Other problems could be taken up, as their importance become apparent, and the attending staff could be changed to suit the requirements. If I have succeeded in making this suggestion at all clear, I hope it may appeal to my hearers—as it does to me—as giving promise of most fruitful results when carried out.

The final fermentative suggestion I have to make is this. A most important development for freedom of learning will be, an extension of agreement among University

Departments in Medicine by which the migration of students may be fostered and encouraged. It will be impossible for any one institution to gather within its walls all the leaders in all branches of medical knowledge. But the best interests of the student — and of medicine — require that the learner should have the opportunity to profit by as much of the best as can be provided for him. This may be accomplished by creating such parallelism in medical teaching in a number of leading institutions that similar years of the course shall be practically equivalent; so that, if a student has completed a year's study in one institution, he shall be competent to continue his work in any one of a number of others. He should be allowed to do this without examination and upon simple certificate. If this could be carried out, it might happen that such a student would attend several different institutions in his course for a medical degree. He would be certain to go to more than one, unless the excellence of instruction in all Departments of each should be more nearly equal than it is easy to suppose possible. The stimulation to teachers would be not the least of the benefits that would arise from the adoption of this plan.

I have thus endeavored to present some of the fermentative changes through which the future growth of medicine is to be influenced.

I know that the accomplishment of some of the suggestions made is likely to be long delayed. Some of them, on the other hand, are nearing completion, and the prospects for progress, for liberal training, and for thoroughness are nowhere brighter than in medicine to-day.

[Besides references in the text, see *The Doctorate of Philosophy in Medical Science*.—*Science*, Aug. 28, 1903, and *Journal of the American Medical Association*, Sept. 26, 1903, p. 789.]





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